



# ***Ionophic™ Smoke Detection Technology***

## ***An Introduction***

***February 2011***

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## A presentation for

- The Office of the California State Fire Marshal Smoke Alarm Task Group
- In preparation for the February 16-17, 2011 meeting
  - Culver City Hall, Culver City, California

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# Agenda

- I. Universal Security Instruments
- II. Iophic™ Technology
  - I. Nuisance resistance
  - II. Detection of Both Types of Fires
  - III. Cost Effectiveness
- III. Summary & Conclusion

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# About Universal Security Instruments

Universal Security Instruments is a U.S. based manufacturer and distributor of residential fire and smoke alarms. Founded in 1969, the Company has over a 37 year heritage of developing innovative and easy-to-install safety devices, including smoke fire and carbon monoxide alarms. Under the current management team, Universal Security has increased revenue and earnings while gaining significant new market share. Universal is the fastest growing and 3rd largest smoke alarm company in the world.



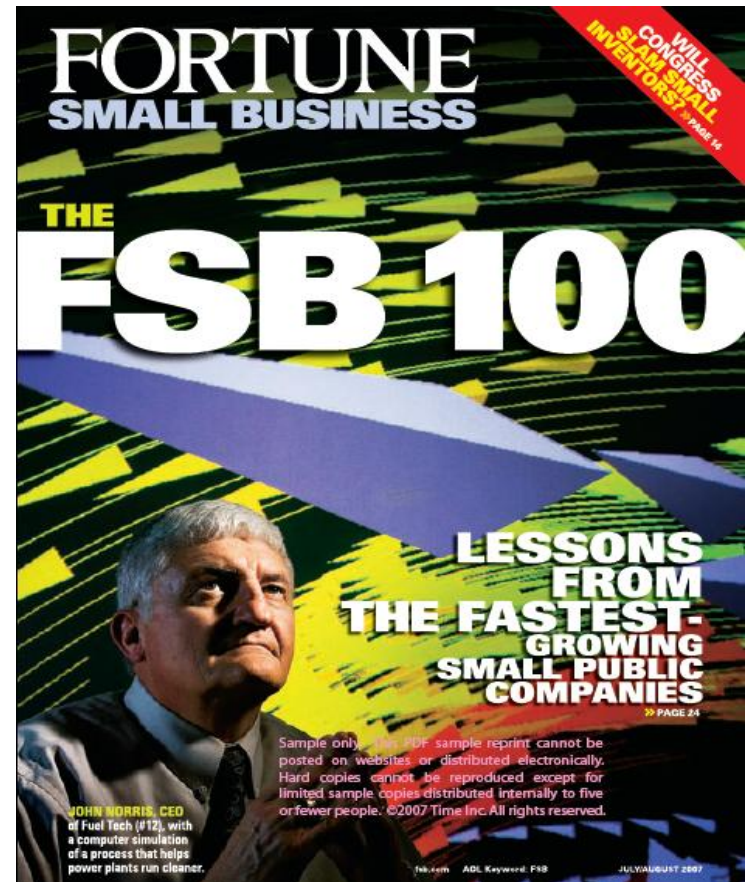
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# Universal Security Instruments

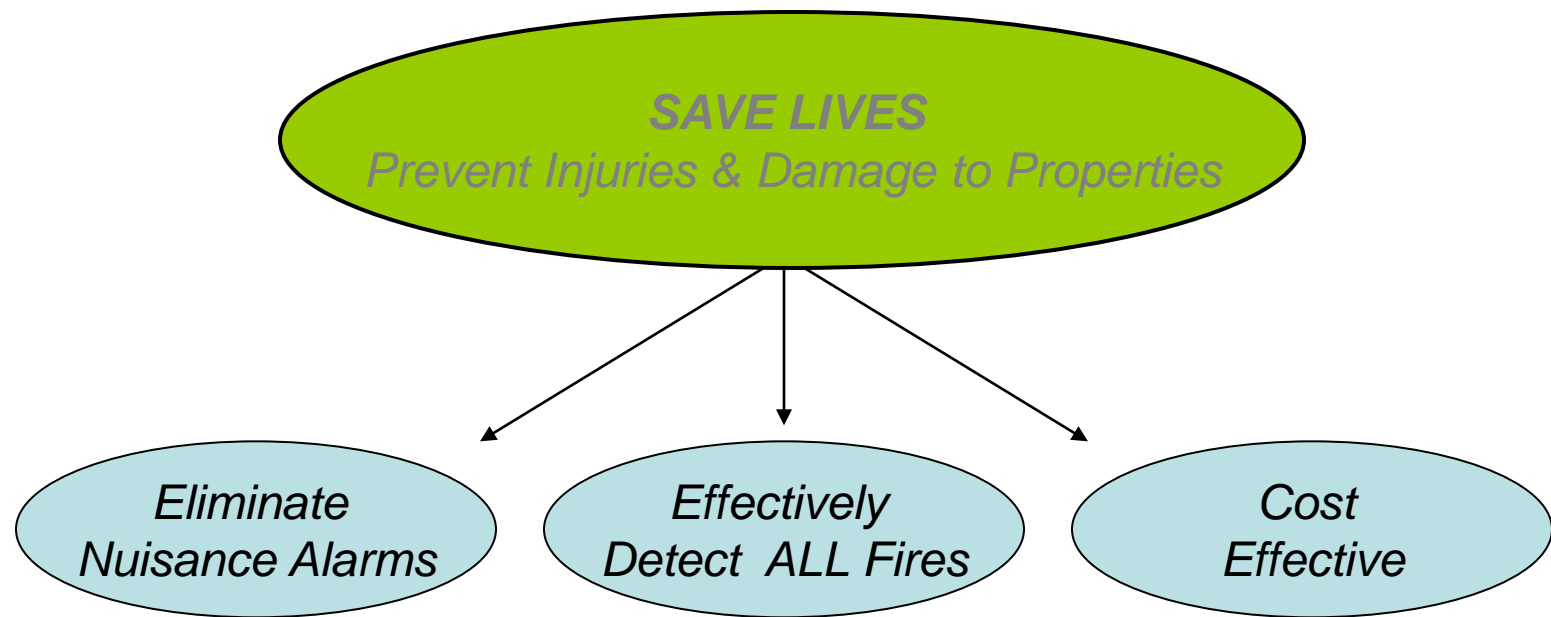
**Universal is the Fastest Growing Smoke Alarm Company in the World**

In 2007, Fortune Small Business Magazine ranked Universal Security #56 among the “FSB 100” list of the top 100 fastest-growing small public companies in the U.S.



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# In creating a new technology USI's goal was:



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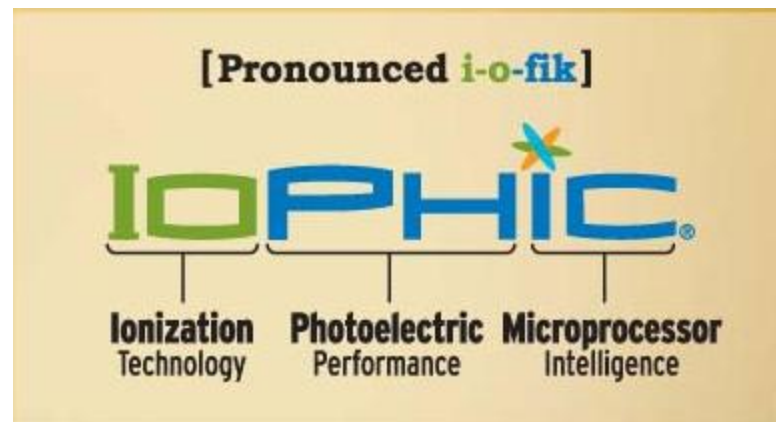
We believe we have succeeded.

- Patent-pending Iophic™ technology addresses issues that have been raised around detection technologies:
  - Prevention of nuisance alarms
  - Response to both slow smoldering and fast flaming fires.

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# The next generation of smoke alarms



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# The IOPHIC™ design combines:

- The responsiveness of a photo-electric sensor to slow smoldering fires
- And of an ion sensor to fast flaming fires
- Using one, cost-effective, ion sensor
- And a microprocessor



...to create a 21st century “smart-alarm.”

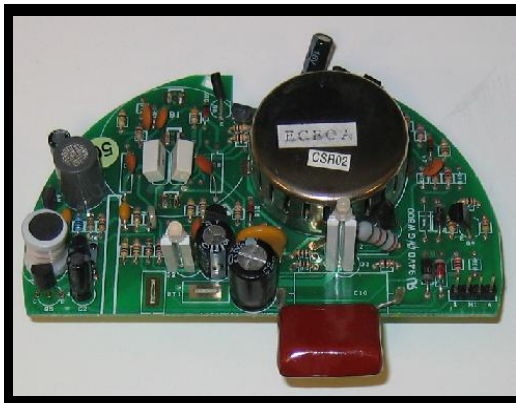
# NEW IoPhic™ Technology Eliminates Nuisance Alarms

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# IOPHIC™ alarms minimize sensitivity to radiated and conducted noise

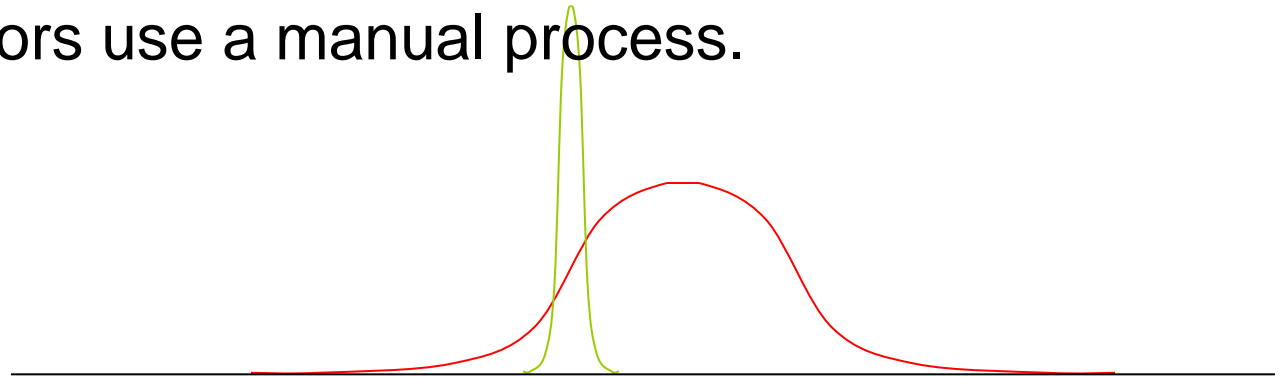
- Surface Mount Technology less susceptible to radiated noise (wireless and inductive spikes) than antiquated thru hole (transistor radio type) components used by most manufacturers.



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# IOPHIC™ minimizes unit to unit sensitivity variation

- **Automatic Sensitivity Calibration** during production, eliminates alarm to alarm variations, narrows production window
  - Competitors use a manual process.



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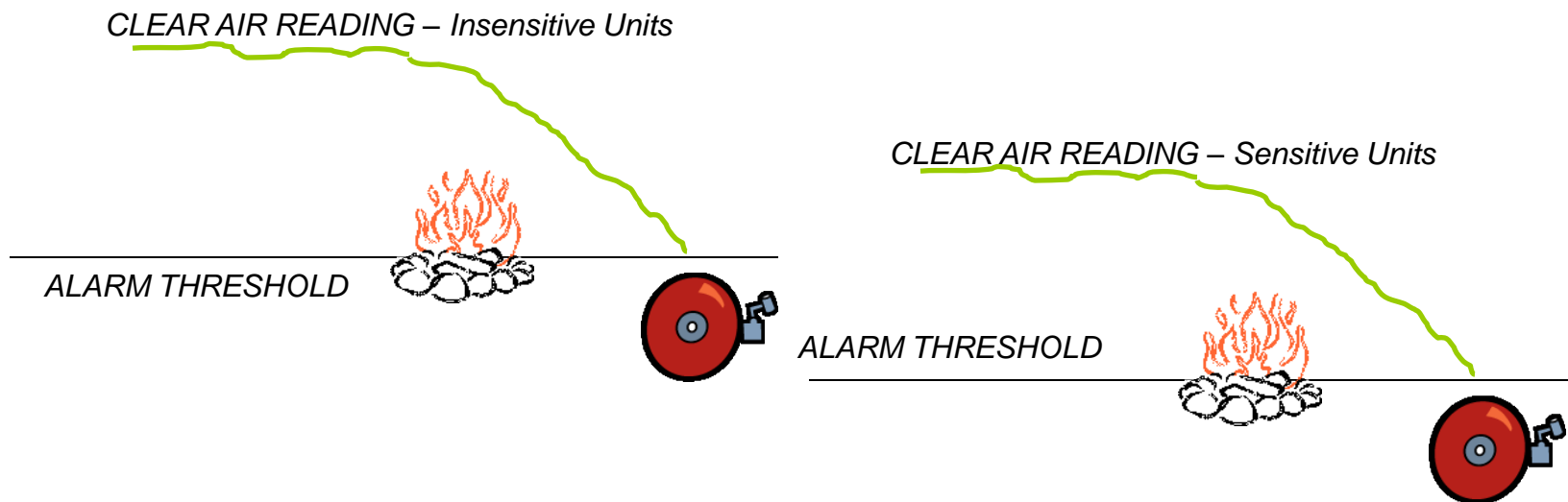
# Initial setting means fewer nuisance alarms.

- Upon power up, an Iophic™ alarm is allowed to operate at the least sensitive level of its listed range.
  - The microprocessor will recognize the smoke signature (smoldering or flaming), then adjust alarm response accordingly.

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# IOPHIC™ calibration means less variation in field performance.

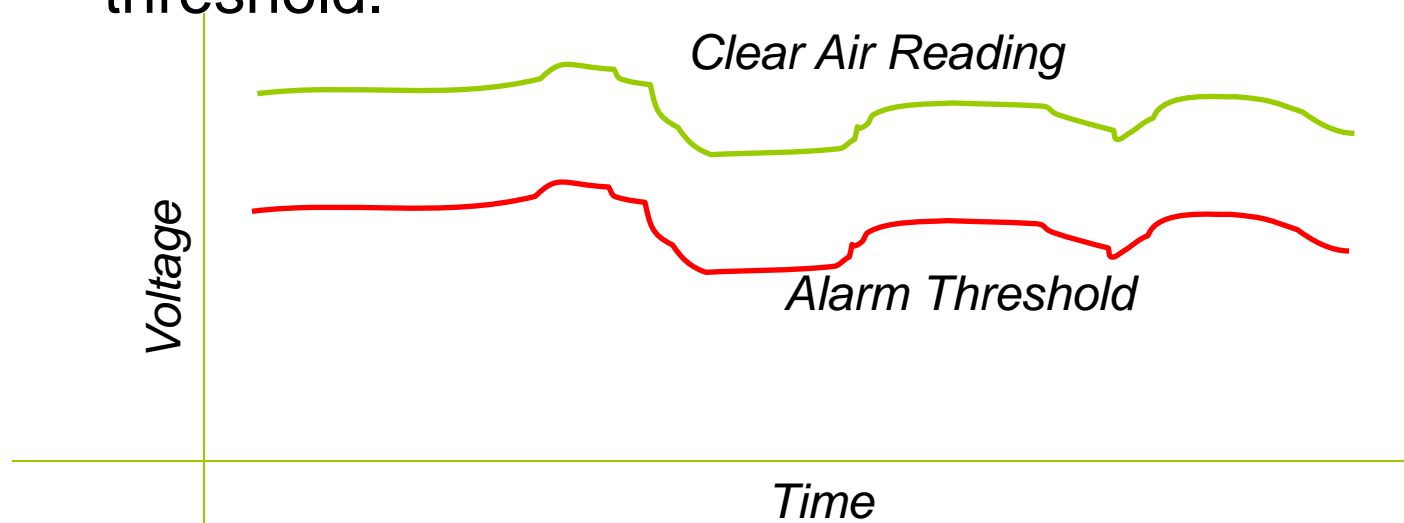
As a result, nuisance alarms due to “sensitive” factory settings are eliminated.



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# IOPHIC™ automatically adjusts to humidity, temperature, and pressure

Patent pending “Dynamic Ambient Compensation” minimizes effect of ambient conditions by adjusting and maintaining constant alarm threshold.

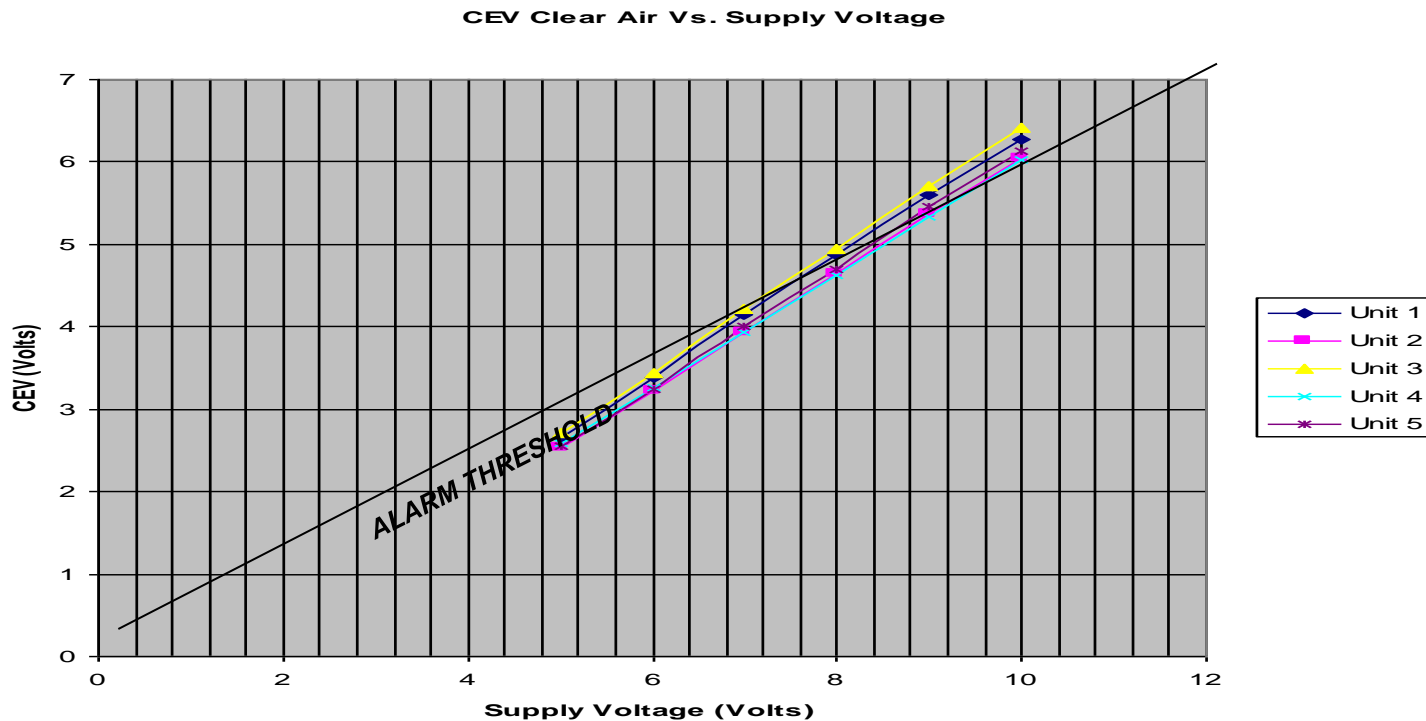


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# IOPHIC™ eliminates sensitivity change due to power supply

- Digital Signal Filtering eliminates response from power fluctuations.
- Regulated 5v power supply for the ion chamber



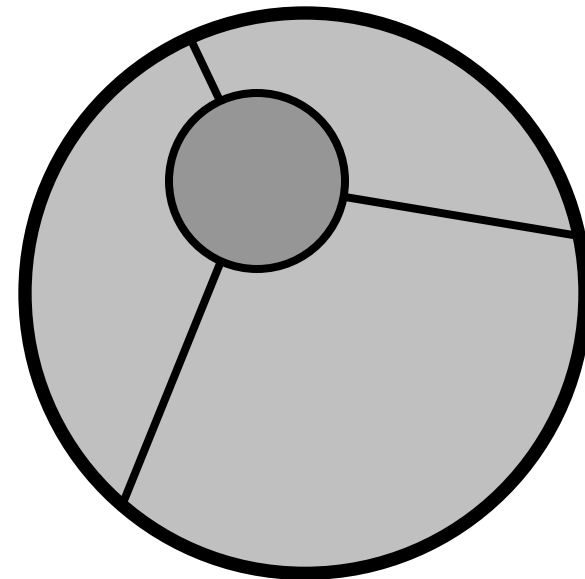
# NEW IoPhic™ Technology Effectively Detects Both Types of Fires

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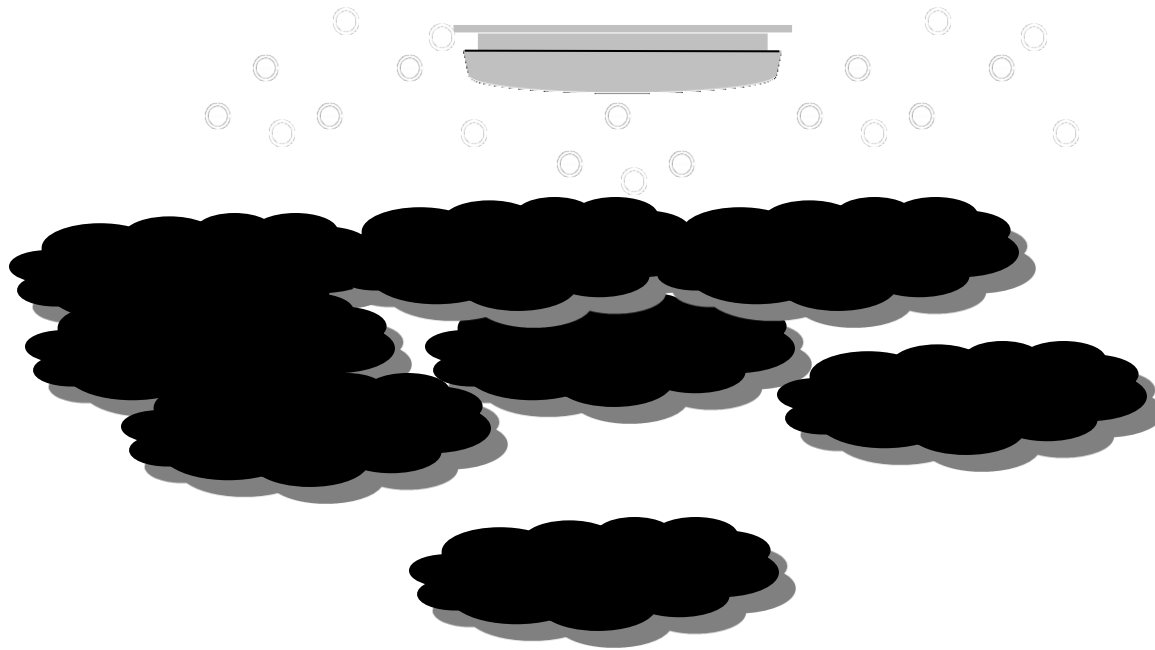
# IOPHIC™ omni-directional sensitivity

*Patent-pending design  
insures smoke intake  
from all directions.*



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# IOPHIC™ detects smoke during stratification



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# **IOPHIC™ does not increase sensitivity to meet UL Fire Test**

- Least sensitive unit, least sensitive direction is what is tested during UL217 Fire Testing
- Iophic™ detects both smoldering and fast fires without having to compensate for sensor response to one type of fire.
- Instant verification of smoke signature via rate of rise

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## As a result, IoPhic™ has an...

- 87% faster  
response to slow smoldering fire  
than the maximum allowable alarm limit\*
- While maintaining reliable, quick response  
to fast flaming fires.

(\*UL217 Smoldering Smoke Test on 5/26/2010,  
Underwriters Laboratories Project #09CA38078.)

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# NEW IoPhic™ Technology Is a Cost Effective Design

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# IOPHIC™ uses cost effective design & production

- Single sensor costs less than dual sensor design with better performance, ion costs less than photo
- Design architecture allows for use of inexpensive microprocessor
  - Microprocessor allows elimination of 30 components
- Surface mount production less expensive than through-hole



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# Other EXCLUSIVE Iophic™ Advantages

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- **Self - Diagnostics** silently tests the unit every minute and identifies a defective alarm
- **Quick Find® Alarm Origination Feature** easily identifies first alarm to sound in an interconnected system
- **Product End-of-Service Life Notification** - 10 years for smoke alarms and 7 years for CO alarms

**INDUSTRY'S FIRST END OF LIFE SIGNAL FOR STAND ALONE SMOKE ALARM**

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# SUMMARY & CONCLUSION

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**IOPHIC\***

- We respectfully suggest the Task Group recognize that recommendations should not be made based solely on the type of sensor used in an alarm or detector.

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# Questions? Please contact:

## **Wendy Gifford**

- Representing Universal Security Instruments
- Phone: 312-642-8040
- Email: [wendy@wendygifford.com](mailto:wendy@wendygifford.com)

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